

**Claims**

1. Method for supporting a 6to4 tunneling protocol across a network  
5 address translation mechanism comprising the steps of :

- receiving an outbound IPv6 packet encapsulated into an IPv4 packet,

- translating the private IPv4 source address in the IPv4 header of the outbound packet into a public IPv4 source address,

10 - transmitting the translated packet over the IPv4 network;

**characterized in that** it further comprises the step of:

- storing an association of the private IPv4 address and the Interface ID value of the 6to4 source address for opposite address translation of inbound packets.

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2. Method according to claim 1, further comprising the steps of:

- receiving an inbound packet over the IPv4 network;

20 - determining whether the inbound packet encapsulates an IPv6 packet;

- in the affirmative, retrieving the Interface ID of the encapsulated IPv6 packet's destination address, and using the Interface ID to retrieve the corresponding stored private IPv4 address, and updating the destination address in the IPv4 header accordingly;

25 - forwarding the modified 6to4 packet on the first network.

3. Method according to one of the claims 1 or 2, further comprising the step of:

30 - changing the IPv4 address part of the 6to4 source address in the IPv6 header of an outbound packet to the public IPv4 address; and

- changing the IPv4 address part of the 6to4 destination address of an inbound packet to the corresponding private IPv4 address.

4. Method according to claim 3, comprising the step of modifying  
35 fields at least of the IPv4 header, such as checksums, whose values depend on the 6to4 source address.

5 5. Method according to claim 2, wherein the step of storing the association of the Interface ID and the source address of the 6to4 packets of the first network and the step of modifying the destination address of inbound packets or the source address of outbound packets as a function of the Interface ID is carried out by an application level gateway assisting the network address translation mechanism.

10 6. Method according to claim 3 or 4, wherein the step of changing the IPv4 part of the 6to4 address are carried out by an application level gateway assisting the network address translation mechanism.

7. Device for supporting a 6to4 tunneling protocol across a network address translation mechanism, comprising:  
- a network address translation mechanism (NAT) for changing the  
15 private source address of an outbound IPv4 packet encapsulating an IPv6 packet into a public source address;  
characterized in that it further comprises  
an application (ALG) for storing the private IPv4 addresses included  
in the 6to4 source address of a host of the IPv6 network, for outbound packets;  
20 and for updating the 6to4 destination address of an inbound packet with a stored private IPv4 address having same Interface ID as the 6to4 destination address.

25 8. Device according to claim 7, wherein the application is further adapted to carry out additional processing of an outbound packet, wherein the additional processing consists in replacing the private IPv4 address part of an 6to4 source address of an outbound packet with the device's public IPv4 address.

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